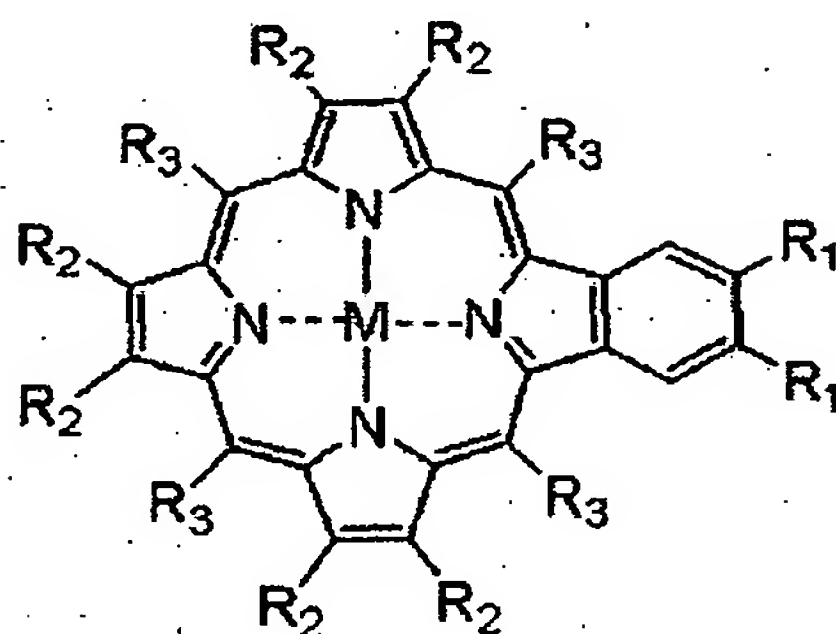


## CLAIMS

1. A field effect transistor comprising an organic semiconductor layer comprising a compound having a monobenzoporphyrin skeleton represented by the general formula (1):



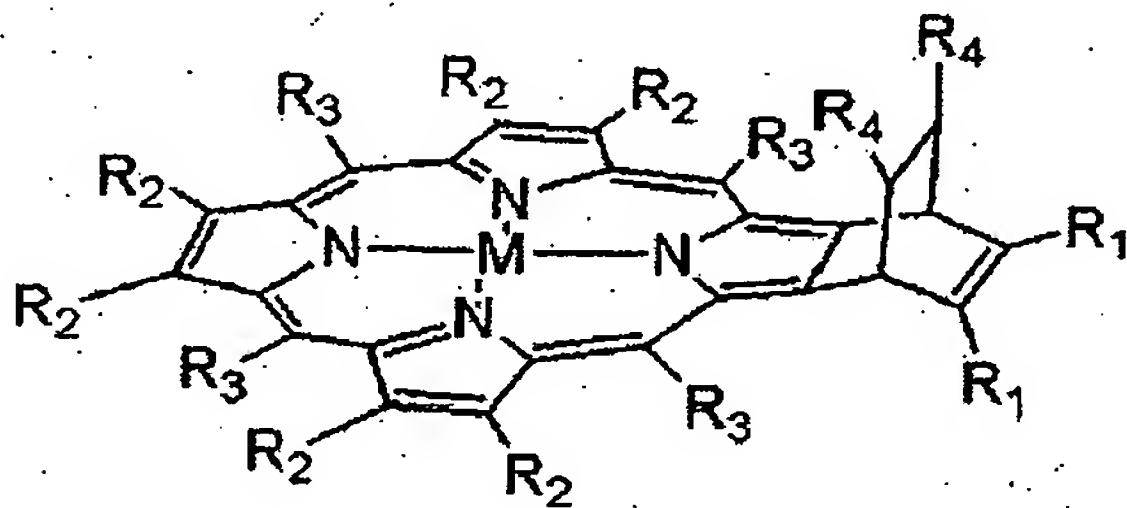
wherein  $R_1$  and  $R_2$  are independently selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, and alkyl, alkenyl, oxyalkyl, thioalkyl, alkyl ester and aryl groups each having 1 to 12 carbon atoms with the proviso that adjacent  $R_1$  may be the same or different and adjacent  $R_2$  may be the same or different and that at least two of  $R_2$  are not hydrogen atoms;  $R_3$  is a hydrogen atom or an aryl group; and  $M$  denotes two hydrogen atoms, a metal atom or a metal oxide.

2. The field effect transistor according to claim 1, wherein the organic semiconductor layer has at least one peak at Bragg angle  $(2\theta)$   $7.8^\circ \pm 0.2^\circ$  in terms of Cu K-alpha X-ray diffraction.

3. The field effect transistor according to claim 1 or 2, wherein  $R_1$  and  $R_3$  of the monobenzoporphyrin compound represented by the general formula (1) are hydrogen atoms and at least two of  $R_2$  are alkyl groups having 1 to 12 carbon atoms.

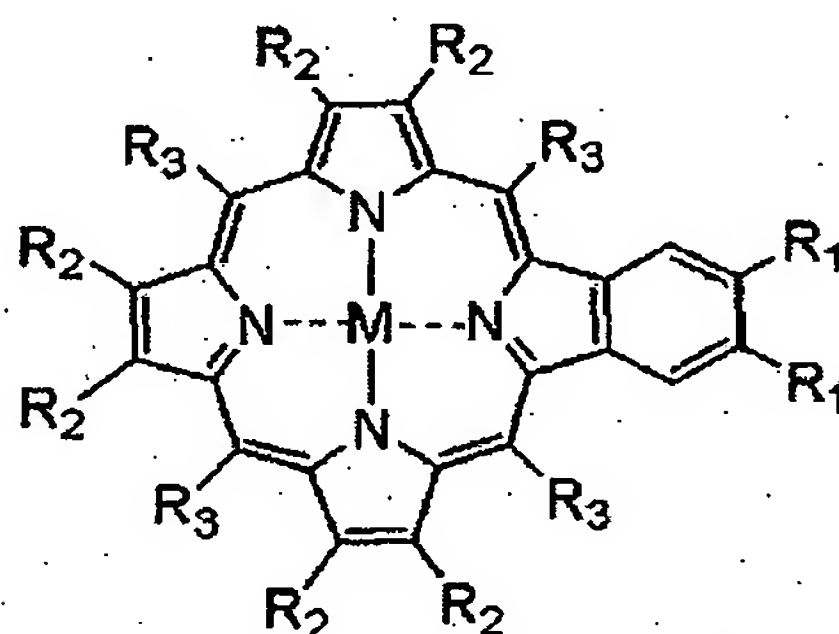
4. The field effect transistor according to any one of claims 1 to 3, wherein  $M$  of the monobenzoporphyrin compound represented by the general formula (1) is two hydrogen atoms or one copper atom.

5. A method of producing a field effect transistor, which comprises the step of heating a monobicycloporphyrin compound represented by the general formula (2):



wherein  $R_1$ ,  $R_2$  and  $R_4$  are independently selected from the group consisting of a hydrogen atom, a halogen atom, a hydroxyl group, and alkyl, alkenyl, oxyalkyl, thioalkyl, alkyl ester, and aryl groups each having 1 to 12 carbon atoms with the proviso that adjacent  $R_1$  may be the same or different and adjacent  $R_2$  may be

the same or different and that at least two of  $R_2$  are not hydrogen atoms;  $R_3$  is a hydrogen atom or an aryl group; and  $M$  denotes two hydrogen atoms, a metal atom or a metal oxide, to effect conversion to a monobenzoporphyrin compound represented by the general formula (1):



wherein  $R_1$ ,  $R_2$ ,  $R_3$ , and  $M$  are as above defined.

6. The method of producing a field effect transistor according to claim 5, wherein the monobenzoporphyrin compound represented by the general formula (2) is heated at a temperature between  $130^{\circ}\text{C}$  to  $250^{\circ}\text{C}$  to be converted to the monobenzoporphyrin compound represented by the general formula (1).

7. A field effect transistor comprising an organic semiconductor layer comprising a compound having a monobenzoporphyrin skeleton and having at least one peak at Bragg angle  $(2\theta)$   $7.8^{\circ} \pm 0.2^{\circ}$  in terms of Cu K-alpha X-ray diffraction.

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